

## **BOEM ENVIRONMENTAL STUDIES PROGRAM: ONGOING STUDIES**

**BOEM OCS Region:** [Gulf of Mexico](#)

**Title:** Energy Market and Infrastructure Information for Evaluating Alternative Energy Projects for OCS Atlantic and Pacific Regions (GM-08-x14)

**Planning Area:** North, South, and Mid-Atlantic, Straits of Florida, Washington/Oregon, and Northern, Central, and Southern California

**Total Cost:** \$443,319.00

**Period of Performance:** FY 2008-2012

**Conducting Organization:** Eastern Research Group, Inc.

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### **Description:**

Background: This study focuses on two aspects of the developing alternative energy activities of the Outer Continental Shelf: the energy market and infrastructure needs of future alternative energy projects. The Energy Policy Act of 2005 delegated to the Bureau of Ocean Energy Management (BOEM) (Formerly the Minerals Management Service) new responsibilities for renewable energy and related uses and activities of the Outer Continental Shelf (OCS). These include uses and activities that produce or support the production, transportation, or transmission of energy from sources other than oil and gas, that is, alternative energy. Consequently, the Energy Policy Act adds considerably to the breadth of BOEM responsibilities.

The National Environmental Policy Act (NEPA) of 1969 requires use of the natural and social sciences in any planning and decision making that may have an effect on the human environment. To this end the BOEM develops and participates in environmental impact statements, environmental assessments, marine environmental data acquisition and data analysis studies, literature surveys, socioeconomic studies, and studies in other disciplines such as marine biology and physical oceanography.

Alternative energy projects link to an electricity market that is very different from the petroleum-based industry BOEM manages under the OCS Lands Act. These projects also will have very different potential environmental effects and operational needs than do offshore petroleum projects. Based on current expressions of industry interests, BOEM expects that most, if not all, alternative energy projects and activities in the foreseeable future will focus on portions of the BOEM OCS Atlantic and Pacific Regions. These are

“frontier areas” with no ongoing alternative energy operations.

The alternative energy industry is rapidly evolving in the face of changing energy markets, technologies, and governmental policies. Most OCS energy projects that will prove economically viable over the next decades are yet to be described fully let alone proven. For example, ultimately wave and current energy from oceans may be the best source of energy versus wind energy. But wind is of greatest interest currently because of its proven technology. However, wind from the OCS may not prove to be the most economic source for wind energy compared to onshore wind resources or other onshore sources of energy.

Planning for this future cannot be based on past experience alone. Limited ocean-based alternative energy development has occurred world-wide and this has been primarily wind power, located offshore of Europe. In contrast, the U.S. OCS represents a frontier area for alternative energy operations, holding much promise but providing no actual operational experience.

Energy markets adjoining the BOEM OCS Atlantic and Pacific Regions are largely dependent on coal, hydropower, and natural gas. Numerous utilities and large grid operators compose the complex mix of energy providers. Also BOEM needs to gain a better understanding of the existing energy infrastructure adjacent to the Atlantic and Pacific Regions.

Objectives: The objectives of this study are to:

1. to provide an overview, or primer, of energy markets and energy infrastructure and how they work and to apply these principles to the analysis of likely alternative energy development scenarios; and
2. to collect and synthesize information to support socioeconomic portions of environmental assessments and other types of BOEM decision documents related to alternative energy on the OCS.

Methods: For the BOEM OCS Atlantic and Pacific Regions and associated onshore areas the study will focus on energy markets and infrastructure. Regional energy markets will be examined with regard to the factors that influence activity, and the strategies and risk management practices applicable to alternative energy concerns. This includes: regional load requirements; capacity and generation mix; imports and exports of electricity and transmission structure. Analysis of Federal and state policies relevant to energy markets and emissions trading programs will also be included. The second part of the study will focus on infrastructure and include description of energy infrastructure including, for example: energy grid operations, major utilities, major power plants, DC to AC inverters, substations, and major transmission lines within the coastal areas, as well as ports used for staging, areas used for fabrication of offshore components (for example, blades and towers for wind energy), support and transport facilities, facilities for transmission lines, etc. The study also includes analysis of likely support infrastructure needs that are

specific to OCS alternative energy development, including such components as substations and transmission lines, ports, relevant manufacturing capabilities, shipyards and shipbuilding, and transportation of components. Finally, to the extent that aspects of this study are geo-spatial, the data will be presented in Geographic Information System (GIS) format.

Products: Written final report and GIS data.

Importance to BOEM: The Energy Policy Act of 2005 MMS responsibilities over renewable energy and related-uses of the Federal OCS. The BOEM Office of Alternative Energy Programs (OAEP) addresses the management of this emerging industry. This study will support the OAEP effort by providing insights into the types and scale of alternative energy-related activities likely to occur in the next 5 to 10 years, and by providing information and analyses in support of the assessment of these concerns and effects.

**Current Status:** The draft report and draft GIS data have been reviewed by BOEM. The draft report is being revised by the contractor for re-submittal and final review process. The project was granted an extension and is on schedule to be completed by May 2012.

**Final Report Due:** May 2012

**Publications:** None

**Affiliated WWW Sites:** None

**Revised date:** January 2012

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